National Institute of Environmental Health Sciences

Genetic improvement of grass pea for low neurotoxin (beta-ODAP) content

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Abstract:

Grass pea is a promising crop for adaptation under climate change because of its tolerance to drought, water-logging and salinity, and being almost free from insect-pests and diseases. In spite of such virtues, global area under its cultivation has decreased because of ban on its cultivation in many countries. The ban is imposed due to its association with neurolathyrism, a non-reversible neurological disorder in humans and animals due to presence of neurotoxin, beta-N-oxalyl-L-alpha,beta-diaminopropionic acid (beta-ODAP) in its seedlings and seeds. The traditional varieties of grass pea contain 0.5-2.5% beta-ODAP. Exploitable genetic variability for beta-ODAP has been observed for development of low ODAP varieties, which along with improved agronomic and detoxification practices can help reduce the risk of lathyrism. Collaborative efforts between ICARDA and NARS have resulted in development of improved varieties such as Wasie in Ethiopia, Ratan, Prateek and Mahateora in India, and BARI Khesari-1 and BARI Khesari-2 in Bangladesh with

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Extreme Weather Event, Food/Water Security

Extreme Weather Event: Drought

Food/Water Security: Agricultural Productivity

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Global or Unspecified

Health Co-Benefit/Co–Harm (Adaption/Mitigation):

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact:

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Intervention:

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type:

format or standard characteristic of resource

Research Article

Resilience:

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale:

time period studied

Time Scale Unspecified